

## LATE REPORTS

TABLE 1.—Mean free-air temperatures and relative humidities obtained by airplanes during December 1936

TEMPERATURE (°C.)

Stations	Altitude (meters) m. s. l.																	Number of observations	
	Surface		500		1,000		1,500		2,000		2,500		3,000		4,000		5,000		
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean		Departure from normal
Coco Solo, Canal Zone,* (15 m).....	24.7	-----	22.1	-----	19.1	-----	16.3	-----	14.3	-----	12.2	-----	9.8	-----	5.6	-----	0.5	-----	28
Pearl Harbor, Territory of Hawaii* (6 m).....	21.6	-1.4	19.4	-0.9	15.5	-1.1	12.5	-1.4	10.5	-1.5	8.8	-1.5	6.8	-1.3	0.9	-1.5	-----	-----	31

## RELATIVE HUMIDITY (PERCENT)

Coco Solo, Canal Zone.....	88	-----	90	-----	87	-----	80	-----	70	-----	59	-----	52	-----	40	-----	20	-----	-----
Pearl Harbor, Territory of Hawaii.....	78	+1	78	0	83	+2	78	+3	64	0	47	-4	36	-6	20	-13	-----	-----	-----

<sup>1</sup> Navy.

Observations taken about 4 a. m., 75th meridian time, except by Navy Stations along the Pacific coast and Hawaii where they are taken at dawn.

NOTE.—The departures are based on normals covering the following total number of observations made during the same month in previous years, including the current month. (Years of record are given in parenthesis following the number of observations.) Pearl Harbor, 139 (8).

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	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal			
Coco Solo, Canal Zone <sup>1</sup> .....	25.3	-----	23.0	-----	20.7	-----	18.4	-----	16.1	-----	13.8	-----	12.2	-----	7.8	-----	2.9	-----	

## RELATIVE HUMIDITY (PERCENT)

Coco Solo, Canal Zone.....	90	-----	90	-----	88	-----	85	-----	84	-----	77	-----	72	-----	61	-----	59	-----	-----
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<sup>1</sup> Navy.

## RIVERS AND FLOODS

[River and Flood Division, W. J. Moxom, temporarily in charge]

By BENNETT SWENSON

Unprecedented floods occurred during January 1937 in the Ohio River Valley. Complete reports of estimated flood losses are not yet available, but it is safe to assume that they were the largest of record. At the close of the

month the Ohio River flood crest had not reached the Mississippi River at Cairo, Ill.

A report on the January 1937 floods will be made in the February issue of the REVIEW.

## ESTIMATED FLOOD LOSSES DURING THE YEAR 1936

The estimated flood losses during the year 1936 are presented in the table below. The losses suffered during the disastrous floods of March and April comprise by far the greater part of the losses for the entire year.

Because of the widespread area over which the floods of March and April occurred and because of their severity, it has been possible only to obtain a very rough estimate of the losses incurred.

The loss due to suspension of business, including the wages lost to employees, was undoubtedly great during these floods but only in a few cases has it been possible even to give an approximation. Wherever such an approximation is available it has been included in the totals.

The amount of damage to land by gulying or other severe erosion or by deposit of silt, sand, gravel, rocks, or

other debris, too, was of great magnitude. However, it is rather difficult to distinguish between that caused by the floods in the rivers or that caused by rainfall. Also it is not known what the effect will be of the great amount of sand which was spread over the farm land. For these reasons it was not considered advisable to include these figures with the losses.

From the data available the total losses incurred during the floods of March and April exceeded \$270,000,000. This sum is slightly less than the estimates of the losses of the Mississippi River flood of 1927 which extended over a period of 6 months.

The splendid cooperation of the Bureau of Public Roads and the Extension Service of the United States Department of Agriculture in collecting information on damages

to State highways and bridges and losses to agriculture is gratefully acknowledged. Credit is also due to the United States Engineer Office, the National Emergency Council in its Report of Loss and Damage, March 1936, Flood in Pennsylvania, and the New Hampshire Flood Reconstruction Council in its Report of the 1936 Flood, for their invaluable assistance in the compilation of the losses due to the floods in the spring of 1936.

## TOTAL FLOOD LOSSES FOR 1936

## ST. LAWRENCE DRAINAGE—LAKE ERIE

*Maumee River in Indiana*

Tangible property totally or partially destroyed.....	\$6, 500
Suspension of business, including wages of employees.....	2, 000
Total.....	<u>8, 500</u>

## ATLANTIC SLOPE DRAINAGE

*Rivers in Maine and eastern Massachusetts except the Merrimack River*

Tangible property totally or partially destroyed.....	11, 395, 100
Livestock and other movable farm property.....	<sup>1</sup> 118, 200

*Merrimack River in New Hampshire and Massachusetts*

Tangible property totally or partially destroyed.....	9, 441, 000
Livestock and other movable farm property.....	<sup>1</sup> 47, 700

*Connecticut River in New England*

Tangible property totally or partially destroyed.....	38, 560, 000
Agricultural losses.....	3, 440, 000

*Long Island Sound Drainage in Connecticut*

Tangible property totally or partially destroyed.....	<sup>2</sup> 1, 021, 500
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*Hudson River in New York*

Tangible property totally or partially destroyed.....	900, 700
Livestock and other movable farm property.....	<sup>1</sup> 35, 300

*Delaware River in New York, Pennsylvania, and New Jersey*

Tangible property totally or partially destroyed.....	5, 064, 200
Livestock and other movable farm property.....	<sup>1</sup> 77, 600

*Susquehanna River in New York and Pennsylvania*

Tangible property totally or partially destroyed.....	55, 077, 450
Prospective crops.....	922, 600
Matured crops.....	930, 700
Livestock and other movable farm property.....	1, 493, 400
Suspension of business, including wages of employees.....	6, 000, 000

*Potomac River in West Virginia, Maryland, and Virginia*

Tangible property totally or partially destroyed.....	8, 888, 500
Livestock and other movable farm property.....	<sup>1</sup> 576, 200

*York and Rappahannock Rivers in Virginia*

Tangible property totally or partially destroyed.....	166, 400
Livestock and other movable farm property.....	<sup>1</sup> 8, 100

*James River in Virginia*

Tangible property totally or partially destroyed.....	1, 672, 050
Livestock and other movable farm property.....	<sup>1</sup> 119, 750
Suspension of business, including wages of employees.....	78, 100

<sup>1</sup> Including damages to crops.<sup>2</sup> Highways and bridges only.*Roanoke River in Virginia and North Carolina*

Tangible property totally or partially destroyed.....	\$71, 800
Prospective crops.....	39, 500
Matured crops.....	25, 000
Livestock and other movable farm property.....	62, 400
Suspension of business, including wages of employees.....	81, 600

*Blackwater River in Virginia and North Carolina*

Tangible property totally or partially destroyed.....	105, 100
Livestock and other movable farm property.....	<sup>1</sup> 16, 550

*Tar River in North Carolina*

Tangible property totally or partially destroyed.....	12, 800
Prospective crops.....	3, 500
Livestock and other movable farm property.....	10, 000
Suspension of business, including wages of employees.....	13, 500

*Neuse River in North Carolina*

Tangible property totally or partially destroyed.....	123, 700
Prospective crops.....	24, 000
Matured crops.....	2, 000
Livestock and other movable farm property.....	20, 000
Suspension of business, including wages of employees.....	33, 500

*Cape Fear River in North Carolina*

Tangible property totally or partially destroyed.....	17, 200
Prospective crops.....	4, 500
Livestock and other movable farm property.....	29, 000
Suspension of business, including wages of employees.....	14, 000

*Yadkin-Pee Dee River in North Carolina and South Carolina*

Tangible property totally or partially destroyed.....	86, 500
Prospective crops.....	85, 600
Matured crops.....	6, 000
Livestock and other movable farm property.....	15, 400
Suspension of business, including wages of employees.....	10, 475

*Black River in South Carolina*

Tangible property totally or partially destroyed.....	2, 000
Prospective crops.....	60, 000
Matured crops.....	10, 000
Livestock and other movable farm property.....	500
Suspension of business, including wages of employees.....	4, 000

*Lynches River in South Carolina*

Tangible property totally or partially destroyed.....	500
Prospective crops.....	1, 000
Matured crops.....	1, 000
Livestock and other movable farm property.....	100
Suspension of business, including wages of employees.....	1, 000

*Waccamaw River in South Carolina*

Tangible property totally or partially destroyed.....	2, 000
Matured crops.....	25, 000
Livestock and other movable farm property.....	6, 000
Suspension of business, including wages of employees.....	54, 000

*Santee River in North Carolina and South Carolina*

Tangible property totally or partially destroyed.....	396, 000
Prospective crops.....	196, 000
Matured crops.....	5, 350
Livestock and other movable farm property.....	4, 550
Suspension of business, including wages of employees.....	80, 700

*Edisto River in South Carolina*

Tangible property totally or partially destroyed.....	12, 000
Prospective crops.....	30, 000
Matured crops.....	2, 000
Suspension of business, including wages of employees.....	1, 000

<sup>1</sup> Including damages to crops.

*Ogeechee and Savannah Rivers in  
South Carolina and Georgia*

Tangible property totally or partially destroyed.....	\$308, 850
Matured crops.....	22, 000
Livestock and other movable farm property.....	24, 000
Suspension of business, including wages of employees.....	40, 200

*Altamaha River in Georgia*

Tangible property totally or partially destroyed.....	63, 000
Prospective crops.....	46, 650
Matured crops.....	4, 700
Livestock and other movable farm property.....	16, 600
Suspension of business, including wages of employees.....	54, 000

Total..... 148, 422, 875

## EAST GULF OF MEXICO DRAINAGE

*Chattahoochee and Apalachicola Rivers  
in Georgia and Florida*

Tangible property totally or partially destroyed.....	58, 100
Matured crops.....	300
Livestock and other movable farm property.....	360, 900
Suspension of business, including wages of employees.....	32, 200

*Conecuh, Escambia, and Pea Rivers in  
Alabama*

Tangible property totally or partially destroyed.....	28, 800
Livestock and other movable farm property.....	260
Suspension of business, including wages of employees.....	8, 650

*Alabama River in Alabama*

Tangible property totally or partially destroyed.....	354, 700
Prospective crops.....	70, 300
Matured crops.....	2, 200
Livestock and other movable farm property.....	7, 050
Suspension of business, including wages of employees.....	48, 650

*Black Warrior and Tombigbee Rivers in  
Alabama and Mississippi*

Tangible property totally or partially destroyed.....	8, 850
Prospective crops.....	650
Livestock and other movable farm property.....	6, 110
Suspension of business, including wages of employees.....	13, 800

*Pascagoula River in Mississippi*

Tangible property totally or partially destroyed.....	126, 500
Prospective crops.....	11, 300
Matured crops.....	3, 800
Livestock and other movable farm property.....	6, 400
Suspension of business, including wages of employees.....	17, 000

*Pearl River in Mississippi*

Tangible property totally or partially destroyed.....	63, 500
Prospective crops.....	1, 500
Matured crops.....	250
Livestock and other movable farm property.....	2, 000
Suspension of business, including wages of employees.....	7, 000

Total..... 1, 240, 770

MISSISSIPPI SYSTEM—UPPER MISSISSIPPI  
BASIN*Minnesota River in Minnesota*

Tangible property totally or partially destroyed.....	25, 000
Prospective crops.....	10, 000

*Wisconsin River in Wisconsin*

Tangible property totally or partially destroyed.....	3, 500
Suspension of business, including wages of employees.....	5, 000

*Illinois River in Illinois*

Tangible property totally or partially destroyed.....	41, 300
Livestock and other movable farm property.....	3, 000

*Upper Mississippi River*

Tangible property totally or partially destroyed.....	\$136, 900
Prospective crops.....	19, 000
Livestock and other movable farm property.....	5, 000
Suspension of business, including wages of employees.....	64, 700

Total..... 313, 400

## MISSISSIPPI SYSTEM—MISSOURI BASIN

*Solomon River in Kansas*

Tangible property totally or partially destroyed.....	300
Prospective crops.....	1, 000

*Republican River in Kansas*

Prospective crops.....	500
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*Grand River in Missouri*

Tangible property totally or partially destroyed.....	25, 500
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*Big Sioux River in Iowa*

Tangible property totally or partially destroyed.....	8, 500
Matured crops.....	500
Livestock and other movable farm property.....	300
Suspension of business, including wages of employees.....	7, 100

*Floyd River in Iowa*

Tangible property totally or partially destroyed.....	13, 000
Matured crops.....	250
Suspension of business, including wages of employees.....	5, 450

*Missouri River*

Tangible property totally or partially destroyed.....	27, 000
Prospective crops.....	20, 000

Total..... 109, 400

## MISSISSIPPI SYSTEM—OHIO BASIN

*Allegheny River in Pennsylvania*

Tangible property totally or partially destroyed.....	72, 826, 430
Livestock and other movable farm property.....	120, 000

*Monongahela River in West Virginia  
and Pennsylvania*

Tangible property totally or partially destroyed.....	34, 491, 400
Livestock and other movable farm property.....	62, 000

*Beaver River in Pennsylvania*

Tangible property totally or partially destroyed.....	33, 000
Livestock and other movable farm property.....	8, 500

*Little Kanawha River in West Virginia*

Tangible property totally or partially destroyed.....	41, 430
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*Green River in Kentucky*

Tangible property totally or partially destroyed.....	13, 100
Livestock and other movable farm property.....	85, 000
Suspension of business, including wages of employees.....	6, 100

*West Fork of White River in Indiana*

Tangible property totally or partially destroyed.....	22, 500
Matured crops.....	2, 400
Suspension of business, including wages of employees.....	1, 500

*East Fork of White River in Indiana*

Tangible property totally or partially destroyed.....	2, 000
Prospective crops.....	1, 500
Matured crops.....	2, 500

*White River in Indiana*

Matured crops.....	5, 000
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*Wabash River in Indiana*

Tangible property totally or partially destroyed.....	153, 600
Prospective crops.....	7, 000
Matured crops.....	103, 650
Livestock and other movable farm property.....	1, 740
Suspension of business, including wages of employees.....	3, 300

<sup>1</sup> Including damages to crops.

*Cumberland River in Kentucky and Tennessee*

Tangible property totally or partially destroyed.....	\$1, 250
Livestock and other movable farm property.....	11, 850
Suspension of business, including wages of employees..	12, 700

*Tennessee River in Alabama and Tennessee*

Tangible property totally or partially destroyed.....	190, 020
Livestock and other movable farm property.....	471, 610
Suspension of business, including wages of employees..	18, 000

*Ohio River*

Tangible property totally or partially destroyed.....	12, 238, 550
Livestock and other movable farm property.....	312, 300
Suspension of business, including wages of employees..	1, 045, 660

Total.....122, 295, 590

## MISSISSIPPI SYSTEM—ARKANSAS BASIN

*Cimarron River in Oklahoma*

Tangible property totally or partially destroyed.....	2, 000
Prospective crops.....	500
Matured crops.....	1, 000

*Verdigris River in Oklahoma*

Prospective crops.....	1, 000
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*North Canadian River in Oklahoma*

Tangible property totally or partially destroyed.....	44, 800
Prospective crops.....	29, 800
Matured crops.....	9, 800
Livestock and other movable farm property.....	700
Suspension of business, including wages of employees..	650

*South Canadian River in Oklahoma*

Tangible property totally or partially destroyed.....	8, 500
Prospective crops.....	20, 800
Matured crops.....	3, 950
Livestock and other movable farm property.....	50

*Petit Jean River in Arkansas*

Matured crops.....	300
Suspension of business, including wages of employees..	1, 500

*Arkansas River*

Tangible property totally or partially destroyed.....	576, 000
Prospective crops.....	65, 500
Matured crops.....	28, 500
Livestock and other movable farm property.....	21, 100

Total.....816, 450

## MISSISSIPPI SYSTEM—RED BASIN

*Sulphur River in Texas*

Tangible property totally or partially destroyed.....	100
Prospective crops.....	7, 000
Matured crops.....	4, 000
Suspension of business, including wages of employees..	5, 300

Total.....16, 400

## MISSISSIPPI SYSTEM—LOWER MISSISSIPPI BASIN

*Lower Mississippi River*

Tangible property totally or partially destroyed.....	26, 050
Livestock and other movable farm property.....	22, 200
Suspension of business, including wages of employees..	6, 500

Total.....54, 750

Total, Mississippi System.....123, 605, 990

## WEST GULF OF MEXICO DRAINAGE

*Trinity River in Texas*

Tangible property totally or partially destroyed.....	\$5, 250
Prospective crops.....	1, 000
Matured crops.....	71, 650
Livestock and other movable farm property.....	33, 800
Suspension of business, including wages of employees..	1, 200

*Brazos River in Texas*

Tangible property totally or partially destroyed.....	831, 000
Prospective crops.....	47, 000
Matured crops.....	2, 339, 000
Livestock and other movable farm property.....	40, 300
Suspension of business, including wages of employees..	74, 700

*Colorado River in Texas*

Tangible property totally or partially destroyed.....	1, 810, 190
Prospective crops.....	167, 500
Matured crops.....	72, 500
Livestock and other movable farm property.....	32, 400
Suspension of business, including wages of employees..	1, 000

*Guadalupe River in Texas*

Tangible property totally or partially destroyed.....	435, 500
Prospective crops.....	1, 312, 000
Matured crops.....	515, 500
Livestock and other movable farm property.....	201, 000
Suspension of business, including wages of employees..	115, 000

*Nueces River in Texas*

Tangible property totally or partially destroyed.....	4, 000
Prospective crops.....	100, 000
Matured crops.....	150, 000
Livestock and other movable farm property.....	5, 000

*Pecos River in New Mexico and Texas*

Tangible property totally or partially destroyed.....	10, 000
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Total.....8, 376, 490

## PACIFIC SLOPE DRAINAGE—SAN JOAQUIN BASIN

*San Joaquin River in California*

Tangible property totally or partially destroyed.....	50, 000
Prospective crops.....	115, 000
Matured crops.....	45, 000
Livestock and other movable farm property.....	1, 000

Total.....211, 000

## SACRAMENTO BASIN

*Sacramento River in California*

Tangible property totally or partially destroyed.....	103, 000
Prospective crops.....	349, 850
Matured crops.....	153, 500
Livestock and other movable farm property.....	2, 200
Suspension of business, including wages of employees..	38, 700

Total.....647, 250

## COLUMBIA BASIN

*Columbia River in Oregon*

Tangible property totally or partially destroyed.....	22, 500
Prospective crops.....	9, 000
Livestock and other movable farm property.....	760
Suspension of business, including wages of employees..	1, 100

Total.....33, 360

Total, Pacific slope drainage.....891, 610

Total estimated losses for the United States..282, 546, 235

<sup>1</sup> Including damages to crops.

<sup>1</sup> Including damages to crops.